

FEASIBILITY OF SOLUTION MINING FOR SODIUM
CARBONATE AT SEARLES LAKE, CALIFORNIA*

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ABSTRACT

Evaporite salts have been processed commercially from brines at Searles Lake, California, for over sixty years. Research at the Jet Propulsion Laboratory on the feasibility of solution mining of trona was stimulated by the ideal conditions which the site offers for the proposed use of salinity gradient solar ponds as an optional means of providing inexpensive low-temperature heat for the injection brine.

The concept, which is based on phase relationships, proposes a novel in situ leaching operation initiated by injecting a warmer-than-ambient saturated sodium sulfate solution. Using this technique yields a brine that is richer in sodium carbonate than that which is presently available in the natural brine. The density of the sodium sulfate solution is controlled to match the density of the existing brines, thereby allowing penetration. It may also prevent subsurface collapse of the strata by its precipitating and thus partially replacing the extracted sodium carbonate.

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